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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/576,315	05/22/2000	Takayuki Yanagisawa	54-209P	1809

2292 7590 11/06/2002

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EXAMINER

VY, HUNG T

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/576,315

Applicant(s)

YANAGISAWA ET AL. 

Examiner

Hung T Vy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.


- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09/20/2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-9 and 22-27 is/are allowed.
- 6) ☒ Claim(s) 1-3, 10-21, 28 and 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 May 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. JP 2000-044511.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7 NA
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. In response to the communications dated 05/22/2000 through 09/20/2002, claims 1-29 are pending in this application as a result of the cancellation of claim 5.

Acknowledges

2. Receipt is acknowledged of the following items from the Applicant.

Information Disclosure Statement (IDS) filed on 05/22/2000 and made of record as Paper No. 7. The references cited on the PTOL 1449 form have been considered.

Foreign Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 01/12/1998.

Specification

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4. The specification has been checked to the extent necessary to determine the presence of possible minor errors. However, the applicant's cooperation is requested in correcting any error of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 13, the phrase "a two-sided reflecting layer on one surface" renders the claim indefinite because it is unclear. What does "two-side....layer on one surface" mean?. See MPEP § 2173.05(d). What is the figure support for this claim? It is not supported by the claim because in the amendment page 11, applicant wants to replace the application to "a two sided reflective coating on one surface of said reflecting mirror" but in the claim is different.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,3,16, and 17 are rejected under 35 U. S. C. § 102 (b) as being anticipated by U.S. Shih, patent No. 5,684,812.

Regarding to claims 1, 3,16, and 17, Shih disclose a self-compensating laser resonator comprising:

A first reflecting apparatus (422) having a first reflecting surface and a second reflecting surface disposed at the a right angle to each other;

A second reflecting apparatus (423) having a third reflecting surface and a fourth reflecting surface disposed at a right angle to each other, said second reflecting apparatus facing said first reflecting apparatus (422) such that the first through fourth reflecting surfaces are facing each other; and

A laser medium (410) provided between said first reflecting surface and said third reflecting surface; and

A light source for exciting said laser medium (410) wherein a first ridge line formed by the intersection of said first and second reflecting surfaces, is substantially orthogonal to a second ridge line formed by the intersection of said third and fourth reflecting surface (See fig 9 below and see column 7, line 9-15) where a laser beam (410) emanating from said laser medium travels along an optical path to said first reflecting surface and is successively reflected, along an optical path, by said first,

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second, third, fourth, second, first, fourth and third reflecting surfaces to again enter said laser medium (See fig 9).

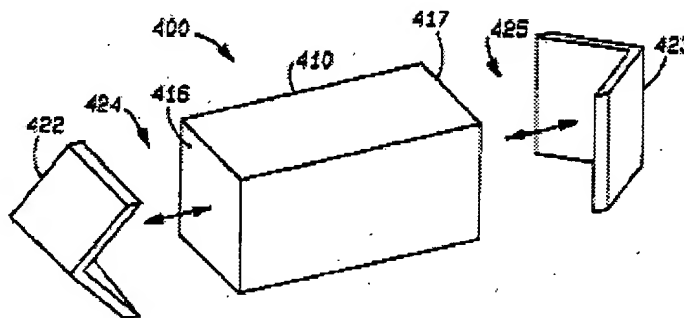


Fig-9

Regarding to claim 3, Shih discloses a partially reflective mirror used for laser output is provided at any one of said first to fourth reflecting surfaces (See column 3, line 51-55).

Claim Rejections - 35 U.S.C. § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 10-15, 28, and 29 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Shih, U.S. patent No. 5,684,812 in view of Sasser, U.S. Patent No. 4,677,639.

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Regarding to claims 11,12, 14, 15, 28, and 29, Shih discloses a self-compensating laser resonator comprising:

A first reflecting apparatus (222) having a first reflecting surface and a second reflecting surface disposed at a right angle to each other;

A second reflecting apparatus (223) facing said first reflecting apparatus and having a third reflecting surface and a fourth reflecting surface disposed at a right angle to each other.

Shih does not disclose a third reflecting apparatus provided between said second and fourth reflecting surfaces, having a fifth reflecting surface and a sixth reflecting surface disposed parallel to, and facing away from, each other; a laser medium provided between said first and third reflecting surfaces; and a light source for exciting said laser medium, a self-compensating laser resonator according, said third reflecting apparatus comprises two single-sided reflecting mirrors mutually fixed by a holder and disposed such that reflecting surfaces thereof are parallel and face in opposite directions from each other. A laser medium having a seventh two-sided reflecting surface on an optical axis of a laser beam on one end surface thereof provided between said first and third reflecting surface, and a laser beam emanating from said laser medium and traveling toward said first reflecting surface is successively reflected by said first, second, third, fourth, second, first, fourth, third and seventh two-sided reflecting surfaces, is further successively reflected by said third, fourth, first, second, fourth, third, second and first reflecting surfaces to again enter said laser medium, passes through said laser medium and is reflected by said seventh two-sided reflecting

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surface and an optical component having an eighth two-sided reflecting surface on an optical axis of a laser beam on one end surface thereof provided between second and fourth reflecting surfaces, wherein a laser beam emanating from said laser medium and traveling toward said first reflecting surface is successively reflected by said first, second, third, fourth, eighth two-sided, fourth, third, second and first reflecting surfaces to again enter said laser medium, passes through said laser medium, is further successively reflected by said third, fourth, first and second reflecting surfaces to be incident on said optical component, and is further successively reflected by said eighth two-sided, second, first, fourth and third reflecting surfaces to once again enter the laser medium.

However, Sasser discloses a third reflecting apparatus (150) provided between said second and fourth reflecting surfaces, having a fifth reflecting surface (118) and a sixth reflecting surface (119) disposed parallel to, and facing away from, each other (see column 9, line 59 – 6, column 10, line 15 – 38 and Fig.9); a laser medium provided between said first and third reflecting surfaces; and a light source for exciting said laser medium, wherein, as Du et al. disclose a laser beam traveling toward said first reflecting surface is successively reflected by said first, second, third, fourth, second, first, fourth and third reflecting surfaces to again enter said laser medium (See column 1 line 5 – 11 and fig. 1) then on Sasser discloses the third reflecting apparatus between second and fourth reflecting surfaces so a laser beam emanating from said laser medium and traveling toward said first reflecting surface is successively reflected by said first, second, third, fourth, fifth, fourth, third, second and first reflecting surfaces to again

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enter said laser medium, passes through said laser medium, and is further successively reflected by said third, fourth, first, second, sixth, second, first, fourth and third reflecting surfaces to once again enter said laser medium, third reflecting apparatus(150) comprises two single-sided reflecting mirrors (118 and 119) mutually fixed by a holder (137,138) and disposed such that reflecting surfaces thereof are parallel and face in opposite directions from each other (See column 9, line 59 – 64 and Fig. 9). A laser medium (175) having a seventh two-sided reflecting surface (199,200) on an optical axis of a laser beam on one end surface thereof provided between said first and third reflecting surface (See column 12 line 35 – 38 and Fig.10) and a laser beam emanating from said laser medium and traveling toward said first reflecting surface is successively reflected by said first, second, third, fourth, second, first, fourth, third and seventh two-sided reflecting surfaces, is further successively reflected by said third, fourth, first, second, fourth, third, second and first reflecting surfaces to again enter said laser medium, passes through said laser medium and is reflected by said seventh two-sided reflecting surface (See column 12 line 25 – 34). And an optical component having an eighth two-sided reflecting surface (119,120) (See column 9 line 59 – 63) on an optical axis of a laser beam on one end surface thereof provided between second and fourth reflecting surfaces, wherein a laser beam emanating from said laser medium and traveling toward said first reflecting surface is successively reflected by said first, second, third, fourth, eighth two-sided, fourth, third, second and first reflecting surfaces to again enter said laser medium, passes through said laser medium, is further successively reflected by said third, fourth, first and second reflecting surfaces to be

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incident on said optical component, and is further successively reflected by said eighth two-sided, second, first, fourth and third reflecting surfaces to once again enter the laser medium (See Fig 9).

It is inherent that, a laser beam emanating from said laser medium and traveling toward said first reflecting surface is successively reflected by said first, second, third, fourth, fifth, fourth, third, second and first reflecting surfaces to again enter said laser medium, passes through said laser medium, and is further successively reflected by said third, fourth, first, second, sixth, second, first, fourth and third reflecting surfaces to once again enter said laser medium because with the same structure and the same of incident beam to the reflected surface. *(See Fig. 9)*

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the self-compensating laser resonator of Shih to have a third reflecting apparatus provided between second and fourth reflecting surfaces, having a fifth reflecting surface and a sixth reflecting surface (119) disposed parallel to, and facing away from, each other; a laser medium provided between said first and third reflecting surfaces; and a light source for exciting said laser medium, the third reflecting apparatus between second and fourth reflecting surfaces so a laser beam emanating from said laser medium and traveling toward said first reflecting surface is successively reflected by first, second, third, fourth, fifth, fourth, third, second and first reflecting surfaces to again enter said laser medium, passes through said laser medium, and is further successively reflected by said third, fourth, first, second, sixth, second, first, fourth and third reflecting surfaces to once again enter said laser medium,

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third reflecting apparatus(150) comprises two single-sided reflecting mirrors (118 and 119) mutually fixed by a holder (137,138) and disposed such that reflecting surfaces thereof are parallel and face in opposite directions from each other. A laser medium (175) having a seventh two-sided reflecting surface (199,200) on an optical axis of a laser beam on one end surface thereof provided between said first and third reflecting surface and a laser beam emanating from said laser medium and traveling toward said first reflecting surface is successively reflected by said first, second, third, fourth, second, first, fourth, third and seventh two-sided reflecting surfaces, is further successively reflected by said third, fourth, first, second, fourth, third, second and first reflecting surfaces to again enter said laser medium, passes through said laser medium and is reflected by said seventh two-sided reflecting surface and an optical component having an eighth two-sided reflecting surface (119,120) on an optical axis of a laser beam on one end surface thereof provided between second and fourth reflecting surfaces, wherein a laser beam emanating from said laser medium and traveling toward said first reflecting surface is successively reflected by said first, second, third, fourth, eighth two-sided, fourth, third, second and first reflecting surfaces to again enter said laser medium, passes through said laser medium, is further successively reflected by said third, fourth, first and second reflecting surfaces to be incident on said optical component, and is further successively reflected by said eighth two-sided, second, first, fourth and third reflecting surfaces to once again enter the laser medium that of Sasser, because those skilled in the art will recognize that such modification and variations can be made without departing from the spirit of the invention of Shih.

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9. Claims 18,20 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Shih, U.S. patent No. 5,684,812 in view of Sasser, U.S. Patent 4,677,639.

Regarding to claims 18 and 20, Shih discloses a self-compensating laser resonator but Shih does not disclose a prism. However, Sasser discloses a first reflecting apparatus and second reflecting apparatus each comprise a prism (172,173) having two reflecting surfaces disposed at right angles to each other and an incident surface of the laser beam (Fig. 10).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the self-compensating laser resonator of Shih to have a prism that of Sasser, because those skilled in the art will recognize that such modification and variations can be made without departing from the spirit of, but further to obtain the high performing, the invention of Shih.

10. Claim 19, 21 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Sasser, U.S. patent No. 4,677,639 in view of Shih, U.S. Patent 5,684,812.

Regarding to claim 19 and 21, Sasser discloses a self-compensating laser resonator comprising:

a first prism (172) having first (176) and second reflecting surfaces (177) disposed at right angles to each other and a first incident surface (178) of the laser beam;

a second prism (173) facing said first prism and having third (191) and fourth reflecting surfaces (192) disposed at right angles to each other and a second incident

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surface (193) of the laser beam, and comprising a ninth two-sided reflecting surface (118,119) on an optical path of the laser beam incident on the second incident surface; a laser medium (162) provided between said first and third reflecting surface; and a light source (163) for exciting said laser medium (162), a laser beam emanating from the laser medium and traveling toward said first reflecting surface is successively reflected by the first, second, third, fourth, second, first, ninth two-sided, first, second, fourth, third, second and first reflecting surfaces to again enter the laser medium, passes through the laser medium, and is further successively reflected by the third, fourth, ninth two-sided, fourth and third reflecting surfaces to once again enter the laser medium (See column 11 line 44 – 50 and Fig. 10 and Fig 9, but Sasser does not disclose the ridge lines of the two prisms are orthogonal. However, Shih discloses two reflecting apparatus are orthogonal (See Fig 9 above). It is inherent that result in the reflective order because with the same structure, with the laser beam incident on the first prism then the reflective should be order.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the self-compensating laser resonator of Sasser to have the ridge lines of the two prisms are orthogonal as that of shih, because those skilled in the art will recognize that such modification and variations can be made without departing from the spirit of, but further to obtain the best result, the invention of Sasser.

It would have been obvious to provide Sasser with the limitations as taught or suggested by Shih.

Allowable Subject Matter

11. Claims 4-9 and 22-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, since the prior art of record and considered pertinent to the applicant's disclosure does not teach or suggest the claimed a self-compensating laser resonator semiconductor wherein laser beam contains a P-polarization and an S polarization component, having an isolator and a seeder light.

The following is a statement of reason for the indication of allowable subject matter:

Claims 4-9 and 22-27 are considered allowable since the prior made of record and considered pertinent to the applicant's disclosure does not teach or suggest the claimed limitations. Shih (U.S. Patent No. 5,684,812) and Sasser(U.S. Patent No. 4,677,639), taken individually or in combination, do not teach the claimed invention having an **isolator** allowing laser beam having a **P-polalarization component** and a **S-polarization component** to pass in only one direction, and **Seeder light**.

Citation of Pertinent References

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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The patent to Nicholson discloses Multiple Crystal Pumping Cavity Laser With thermal And Mechanical Isolation, U.S. Patent No. 4,910,746.

The patent to Waarts et al. disclose Frequency Converted Laser Diode And Lens System Therfor , U.S. Patent No. 5,321,718.

The patent to Zare et al. disclose Cavity-Locked ring Down Spectroscopy, U.S. Patent No. 6,084,682.

The patent to De Groot discloses Interferometric apparatus and method for Measuring motion along Multiple Axes, U.S. Patent No.6,208,424.

The patent to Patel et al. disclose Compact pumped Laser Resonator and Method, U.S. Patent No.5, 923,695.

Conclusion

13. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung VY whose telephone number is (703) 605-0757.

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The examiner can normally be reached on Monday-Friday 8:30 am - 5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul IP can be reached on (703) 308-3098. The fax numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



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Hung T. Vy
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October 21, 2002